ROYAL ASTRONOMICAL SOCIETY.

VOL. VI. *December* 8, 1843. No. 2.

FRANCIS BAILY, Esq., President, in the Chair.

The following communications were read:—

I. On the Apparent Magnitudes of the Fixed Stars. By C. Piazzi Smyth, Esq. Communicated by Captain W. H. Smyth, R.N.

The author complains of the want of information on the methods of observing the apparent magnitudes of the stars, and of the little attention which has been paid to the proposal of a prize for a successful photometer (*Memoirs*, Vol. I. p. 507), by the Astronomical Society.

He proposes to employ telescopic vision, and to measure the degrees of brightness of every star by means of the obscuration which is necessary to make it vanish. By this means, the necessity of direct comparison between stars taken two and two is avoided, and an absolute zero is established.

For producing the obscuration, he proposes, in the first place, a long wedge of blue coloured glass (with its prismatic qualities counteracted by a similar transparent wedge), made to slide between the object and eye-glasses, a little way out of focus. This wedge might be fixed on the eye end of the telescope, mounted either in a micrometer frame, or made to move in the manner of a barometer scale.

Another plan is, to have a coloured *disc* of glass in the tube, capable of sliding up and down in it, by which means the object will be differently obscured, on account of the variation of the diameter of the pencil of rays at different distances.

The author then dwells on the method of observation, the means of getting rid of the atmospheric effect, the establishment of a common unit of comparison, and the obviation of the practical difficulty of obtaining a uniform rate of obscuration.

II. On an Astronomical Time Watchcase. By the Rev. Professor Chevallier.

The author has invented a contrivance, by means of which a common watch can, at pleasure, be made to denote sidereal time,

nearly enough for the purpose of warning an observer when his presence will be wanted in the observatory.

The principle of the contrivance is to *set a moveable face to the hands of the watch instead of setting the moveable hands to a fixed face.* This is effected by means of a circular box containing the watch. The lid has a circular aperture, through which the hands of the watch may be seen. Upon the lid is a circular plate, upon which is engraved a double circle of hours, from 0 to 12 and from 12 to 24; and a concentric inner circular plate, moveable separately, upon which the minutes are engraved. A small pointer projects from the part of the inner circle, which indicates 60^m, directing the eye at once to that point as the temporary upper part of the face.

In order to set this watch-case for use, it is quite unimportant what time the watch itself indicates. The lid is simply placed so that the hour-hand of the watch may point to the part of the hour-circle corresponding to the sidereal hour: the minute-circle being subsequently turned, till the minute corresponding to the minute of sidereal time is opposite to the minute-hand of the watch.

The hands of the watch then, *as referred to the temporary position of the moveable circles*, indicate sidereal time; and, if they are set a little too fast, they will continue to do so to the nearest minute for almost six hours; thus giving the observer upon his table a duplicate of his observatory clock, sufficiently exact for the purpose which he wants.

It is plain that this contrivance can, with the greatest ease, be applied to any common watch-case; or, if a watch-glass were made capable of being turned round, the hours might be marked upon the glass, the minutes being engraved upon a moveable rim upon the watch-case.

III. Mean Places, for Jan. 1, 1842, of 50 Telescopic Stars, within two degrees North Polar Distance, observed in the years 1842 and 1843, at Markree, in the County of Sligo. By E. J. Cooper, Esq. and A. Graham, Esq.

In the reduction of the observations the index correction was, with a very few exceptions, taken from observations of *Polaris;* using the apparent place given in the *Nautical Almanac*, corrected for the terms of nutation involving $2\mathfrak{D}$. From the corrected observed right ascensions and declinations, the ecliptic polar distance and angular distance from the solstitial colure were determined, using the apparent obliquity of the *fixed* ecliptic, after having allowed for the motion of the equinoxial points along the equator. Applying the correction for aberration, precession, and nutation, the mean of the resulting co-latitudes and co-longitudes, with the mean obliquity of the *fixed* ecliptic for the 1st January, 1842, were used in finding the mean right ascensions and declinations.

In order that a judgment may be formed of the accuracy of the results, columns are annexed, to shew the extreme difference of the mean co-latitudes and co-longitudes which resulted from each observation.

IV. On the Orbits of several ancient Comets. By J. R. Hind, Esq. of the Royal Observatory, Greenwich. Communicated by the Rev. R. Main.

The elements of the following comets are in this paper deduced from observations given by M. Edouard Biot, in the Appendix to the *Connaissance des Temps* for 1846, viz.: of the second comet of 568; of the comet of 574; and of the comet of 1385. In the cases of the first and second of these an ephemeris is computed from the elements which represent the observations with tolerable accuracy. The observations are found in a supplement to the catalogue of Ma-tuon-lin (translated by M. Biot). This supplement and Ma-tuon-lin's *Catalogue of Extraordinary Stars* contain many observations, not previously published, and the orbits of the above-mentioned comets are not found in any catalogue. From the nature of the Chinese observations the longitude of the nodes and inclinations of the orbits are subject to great uncertainty; indeed, none of the elements can be considered as better than rough approximations.

V. Approximate Elements of the Orbit of the Comet recently discovered by M. Faye. By Professor Henderson.

The comet discovered at Paris by M. Faye was observed at Edinburgh on December 2d.

At $9^h\ 58^m\ 6^s$ mean time, its right ascension was $5^h\ 20^m\ 20^s{\cdot}4$, and declination $+5^\circ\ 5'\ 13''$.

From the observations made at Paris on November 24, at Kensington on November 29, and at Edinburgh on December 2, the following approximate elements of the orbit have been deduced:—

Time of Perihelion Passage, Sept. 28·898 Greenwich mean time.

Perihelion Distance	2·5976
	° ′
Longitude of Perihelion	57 2
Longitude of Ascending Node	226 4
Inclination	22 14

Motion direct.

From the great distance of the comet, and slowness of its motion, small errors in the observations and quantities neglected in the computations have a considerable effect upon the elements. Those here given may indicate the place where the comet is to be found.

Of all the comets whose orbits have been determined, this has the greatest perihelion distance, except the one of 1729.

$$x = [9{\cdot}9833]\ r.\ \sin\ (v + 144^\circ\ 50')$$
$$y = [9{\cdot}9968]\ r.\ \sin\ (v + 52\ 44)$$
$$z = [9{\cdot}4784]\ r.\ \sin\ (v + 118\ 40)$$

VI. Two circular letters from Professor Schumacher on the Comet discovered by M. Faye. Communicated by F. Baily, Esq.

These circulars contain letters from M. Faye, announcing the

discovery and observations of the comet. The observed places are as follows, for Paris mean time:—

	h m s	R.A. = ° ′	Decl. = ° ′ ″
1843, Nov. 22	14 44 11	81 5·0	+ 6 56 ...
	15 28 54	81 4·5	6 58 ...
24	17 4 43	80 50·7	6 30 35

VII. Results of Observations made with a Sextant and Pocket Chronometer, for determining the Latitude and Longitude of the Apartments of the Society. By J. Hartnup, Esq. Communicated by Captain W. H. Smyth, R.N.

The observations from which the latitude and longitude were determined, were made with a 10-inch sextant mounted on a stand, and the altitudes were taken in an artificial horizon of mercury.

The resulting longitude is the mean of nine partial results, deduced from observations included between June 24, 1842, and May 4, 1843. The mean of these results gives $27^{s}\cdot38$ west of Greenwich, the extreme difference being $0^{s}\cdot82$. The first result was derived by observations made at Somerset House, and at Lord Wrottesley's Observatory, at Blackheath, with an assumed rate of the chronometers during the interval, the longitude of Lord Wrottesley's Observatory being assumed to be $2^{s}\cdot7$ east of Greenwich. For the second and third results, the difference of longitude between Somerset House and Mr. Bishop's Observatory, in the Regent's Park, was obtained, the longitude of Mr. Bishop's Observatory being assumed to be $37^{s}\cdot1$ west of Greenwich. The last six results were obtained by direct comparison with Greenwich, the Greenwich time being furnished by the Rev. R. Sheepshanks, through chronometers which had been compared by him with the transit clock at the Royal Observatory.

The altitudes of stars from which the latitude is derived were taken on the eastern end of the terrace, about 340 feet south of the apartments of the Society. Stars were observed south of the zenith to balance with *Polaris*, which was observed both on and at a distance from the meridian.

From six partial results, obtained between November 12, 1842, and January 4, 1843, the latitude of the east end of the terrace was found to be 51° 30′ 34″·9 north; the extreme difference being 3″·4. Whence the latitude of the apartments of the Society results 51° 30′ 38″·3 north.

Erratum in last Monthly Notice (*November* 10, 1843).

Page 10, Right Ascension of Mauvais's Comet, June 6, *for* 342° *read* 343°.

London :—Printed by Moyes and Barclay, Castle Street, Leicester Square.

The following additional communication respecting the comet discovered by M. Faye has been received from Professor Henderson :—

The comet was observed again at Edinburgh on December 15. At $11^h\ 38^m\ 7^s$ mean time (time of meridian transit), its right ascension was $5^h\ 14^m\ 1^s{\cdot}6$, and declination $+3^\circ\ 28'\ 12''$; with some uncertainty, for the comet was very faint, and only one observation could be made.

From the Paris observation of November 24, and those at Edinburgh on December 2 and 15, the following elements have been deduced :—

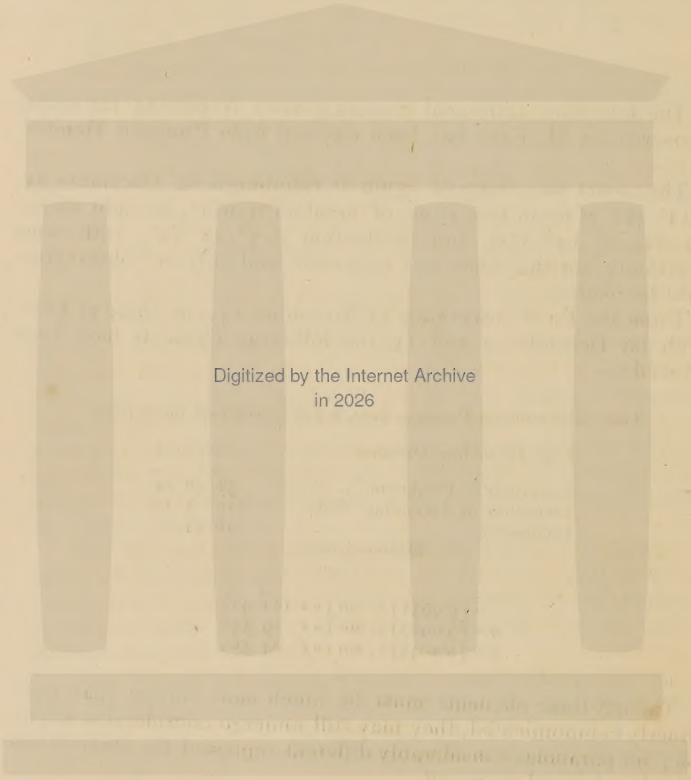
Time of Perihelion Passage, Sept. $8^d{\cdot}836$ Greenwich mean time.

Log. Perihelion Distance.....	0·26102
Longitude of Perihelion	$32^\circ\ 56'\ 24''$
Longitude of Ascending Node.....	$219\ \ 2\ 19$
Inclination.....	$16\ 17\ 10$

Motion direct.

$$x = [9{\cdot}9931]\ r.\ \sin(v + 121^\circ\ 47')$$
$$y = [9{\cdot}9927]\ r.\ \sin(v + 29\ 53)$$
$$z = [9{\cdot}4045]\ r.\ \sin(v + 74\ 56)$$

Though these elements must be much more correct than those formerly communicated, they may still undergo considerable alteration ; for parabolas considerably different represent the observations with almost equal accuracy.



Digitized by the Internet Archive
in 2026

https://archive.org/details/monthly-notices-of-the-royal-astronomical-society_1843-12-08_6_2

COMETS.

SINCE the June Meeting, the following communication has been received from Professor Schumacher, in a letter to the Astronomer Royal, dated June 27:—

Observations of Colla's Comet.

Königsberg. Dr. Busch (Merid. Circle, Inferior Culmin.)

1845.	Mean Time. h m s	Right Ascension. ° ′ ″	Declination. ° ′ ″
June 8	12 8 33·0	79 18 24·5	+45 20 1·9
9	26 14·7	84 43 41·9	45 28 14·3
10	43 5·5	89 56 13·1	45 15 19·1
11	58 38·0	94 49 7·4	44 44 13·2

Mr. Wichmann (Heliometer, Stars of Comp. *own determ.*, *Bessel's Zones*, *Histoire Cel.*)

	Mean Time. h m s	Right Ascension. ° ′ ″	Declination. ° ′ ″
June 7	13 2 42	74 5 27·6	+44 51 7·3
9	12 22 0	84 42 36·9	45 28 21·4
10	12 4 59	89 48 12·4	45 16 1·4
	13 9 37	90 1 39·1	45 14 58·9
11	11 48 35	94 35 23·6	44 45 54·5
12	12 46 5	99 13 26·0	43 59 30·3
14	11 54 18	106 46 8·5	42 0 47·8
15	12 45 20	110 7 40·3	40 50 1·6
16	12 51 31	113 0 1·8	39 37 57·3
19	11 19 6	119 39 41·6	36 4 29·7

Göttingen. Professor Gauss (Merid. Circle, Inferior Culmin.)

	Mean Time. h m s	Right Ascension. ° ′ ″	Declination. ° ′ ″
June 12	13 12 59·9	99 26 5·4	+43 56 53·6

Modena. Professor Bianchi (Micrometer).

	Mean Time. h m s	Right Ascension. ° ′ ″	Declination. ° ′ ″
June 6	14 24 31·5	69 5 10·8	+44 5 8·4
7	14 56 9·2	74 33 56·8	44 51 34·4
8	9 19 34·3	78 36 12·9	45 20 56·4

Hamburg. Mr. Funk (Transit, Inferior Culm.)

	Mean Time, h m s	Right Ascension. ° ′ ″
June 12	13 12 59·8	99 26 2·8
13	13 25 13·6	103 29 9·1
15	13 44 41·5	110 20 11·6

Mr. Rumker (Wire Micrometer).

	Mean Time. h m s	Right Ascension. ° ′ ″	Declination. ° ′ ″
June 20	10 46 7·3	121 28 0·4::	+34 53 1·1

The following elements and ephemeris of Colla's Comet have been recently received from Mr. Hind :—

"33 *High Street, Marylebone, June* 16, 1845.

"*Ephemeris of Colla's Comet.*

Noon, Mean Time at Greenwich.

1845.		h	m	s	°	′		
June 14	R.A.	7	1	3	δ +42	29·6	Log. Δ	9·9597
16		7	26	50	40	11·5		9·9846
18		7	47	7	37	45·4		0·0105
20		8	3	5	35	21·9		0·0364
22		8	15	46	33	6·1		0·0617
24		8	25	59	31	0·0		0·0859
26		8	34	23	29	4·0		0·1090
28		8	41	23	27	17·6		0·1308

"This ephemeris is deduced from the following corrected elements depending on the Greenwich Observation, June 8, Cambridge, June 10, and South Villa, June 12 :—

Per. Passage, 1845, June 5·69870, M. T. at Greenwich.

π 261 56 52·0
Ω 337 50 5·6 } M. Eq. June 0.
i 48 47 58·8

Log. q 9·6036440.

Retrograde.

"The comet will pass the descending node on the evening of July 27, distant only 0·0617 (earth's mean distance = 1) from our path. We shall, however, be far from the comet."